

Remarks

Claims 1-23 are pending in the application. Claims 1-19 are rejected, while claims 20-23 are withdrawn from consideration. By this paper, claims 1 and 9-11 are amended. Based on the following, consideration of the amended claims, and reconsideration of the remaining claims, are requested.

Claim Rejections—35 U.S.C. § 112

The Examiner rejected claims 1-19 under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and to distinctly claim the subject matter of the invention. Specifically, the Examiner states that in claim 1 the phrase “the first equation including the use of a first velocity relationship relating the engine velocity and the velocity of the first motor based on the vehicle architecture” is indefinite because it is not clear what type of relationship is being claimed.

By this paper, claim 1 is amended to more particularly point out and distinctly claim the subject matter of the invention. For example, amended claim 1 recites a method for validating engine and motor velocities "in a vehicle including an engine and a first motor arranged in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor...." Amended claim 1 also recites the step of "using the determined engine velocity and the measured velocity of the first motor in a first equation," where the first equation includes "the use of a first velocity relationship mathematically relating the engine velocity and the velocity of the first motor based on the vehicle architecture...." Thus, it is clear from the language of amended claim 1 that the relationship between the engine velocity and the velocity of the first motor is a mathematical relationship. This is further defined in that the mathematical relationship is based on the vehicle architecture. Applicants submit that this language fully complies with Section 112, second paragraph. Moreover, the specification is replete with examples of such mathematical relationships based on vehicle architecture—see, e.g., paragraphs 0034 and 0054.

In addition to the foregoing, the Examiner rejected claim 1 based on the phrase "the first equation being determinative of whether a mathematical combination of at least the engine velocity and the velocity of the first motor is within a first predetermined speed range." Specifically, the Examiner states that "one cannot tell if it is the 'first equation' or the 'mathematical combination' which is being used as the basis by which the engine velocity and that of the first motor are validated, where the term 'mathematical combination' is clearly indefinite as presently recited and claimed." First, Applicants submit that the term "mathematical combination" is not indefinite as recited and claimed. By definition, the term "mathematical combination" includes elements which are combined mathematically. Mathematical functions include such things as addition, subtraction, multiplication, and division. Of course, there are many other types of mathematical functions, by which elements can be combined mathematically. Therefore, even in the abstract, the term "mathematical combination" is a clearly defined term; however, as recited in claim 1 the term is not used in the abstract, but provides a list of elements to be included in such a mathematical combination. Specifically, claim 1 recites "a mathematical combination of at least the engine velocity and the velocity of the first motor...." On its face, this language is very clear. Moreover, specific examples are given throughout the specification—see, e.g., paragraphs 0052-0054.

As noted above, the Examiner stated that it was unclear whether it was "the first equation" or the "mathematical combination" which is used as the basis for the validation of the engine velocity and the velocity of the first motor. It is unclear from the Examiner's rejection whether an understanding of the "mathematical combination" would address this issue. For purposes of this reply, it is assumed that it is a separate issue, which Applicants now address. Claim 1 is clear when it recites that the first equation is "determinative of whether a mathematical combination of at least the engine velocity and the velocity of the first motor is within a first predetermined speed range...." Thus, "the first equation" as recited in claim 1 provides information as to whether the recited "mathematical combination" is within some speed range. The claim further states that the velocities of the engine and the first motor are validated when the recited mathematical combination is within the first predetermined speed range. Thus, if application of "the first equation" yields a determination that the recited

"mathematical combination" is within the "first predetermined speed range," then the engine and first motor velocities are validated. Applicants respectfully submit that the Examiner's rejection is unclear, because it is uncertain as to what the Examiner means by "the basis" for the validation. The use of the first equation and the use of the mathematical combination are clearly and specifically recited in claim 1.

The Examiner takes further exception with claim 1, stating that lines 15-18 of claim 1 are unclear because of the recitation of the "mathematical combination." Applicants believe that this has adequately been addressed above. Further, the Examiner states that "it would seem that this type of 'validation' may only be useful for determining whether or not the engine and the first motor are moving at all, and NOT actually determining or validating that the one or the other of the engine in the first motor are rotating at any particular speed or velocity." First, Applicants respectfully submit that whether it "seems" to the Examiner that the validation "may only be useful" for a particular determination is irrelevant to a Section 112, second paragraph rejection. To the extent that the Examiner does not understand how such a validation is useful for its intended purpose, Applicants refer the Examiner to the specification, where the concepts are explained in detail. Those of ordinary skill in the art understand that there are known relationships between the velocities of certain devices in mechanical systems such as vehicles. The invention as recited in claim 1 takes advantage of those known relationships, understanding that certain mathematical combinations of the related velocities must always be within a certain range. If such a mathematical combination is outside of the range, it may be an indication that the measurement of at least one of the velocities is inaccurate, and hence, the velocities are not validated.

Finally, Applicants submit that claim 1 as originally filed was fully compliant with Section 112, second paragraph. That notwithstanding, claim 1 has been amended to more particularly point out and distinctly claim the subject matter of the invention. Each of the Examiner's specific rejections being addressed, Applicants respectfully request that the Section 112, second paragraph rejection to claim 1 be withdrawn.

The Examiner rejected claim 10, stating that at lines 8-10 "Applicant has not particularly pointed out and distinctly claimed exactly what type 'mathematical combining' is being performed." Applicants will not recite the explanation given above in its entirety; however, Applicants do reiterate that a mathematical combination is a clearly defined term even in the abstract. Claim 10 recites specific terms—i.e., the engine velocity and the velocities of the first and second motors—as the elements which are mathematically combined. Therefore, there is more than a mere abstract recitation of the term "mathematically combining." Moreover, as noted above, the specification includes numerous specific examples of mathematical combinations. In addition, the claims themselves—e.g., claim 11—also recite such specific mathematical combinations.

In addition to the foregoing, the Examiner takes exception to lines 11-15 in claim 10, stating that "it is not clear exactly how Applicant is able to 'validate' or verify the speed or velocity of any one or all of the engine, first motor and second motor by simply comparing Applicants [sic] claimed mathematical combination with a single combined speed term. At best it would seem to validate the combined speed term as a whole, but not with respect to any of the individual speeds or velocities of the engine, first or second motors." Again, Applicants must respectfully refer the Examiner to the specification, and state that those of ordinary skill in the art would understand how the comparison of the velocities of different elements having known velocity relationships to each other would lead to a validation of those velocities. Applicants will not reiterate the complete explanation given above; however, Applicants do reiterate here that because of known relationships in the velocities of the elements based on mechanical structure—i.e., the vehicle architecture—a combination of those velocities must be within a certain range, or it may be indicative of inaccuracies in the measurements of their respective velocities.

Based on the foregoing, Applicants submit that amended claim 1 and amended claim 10 are fully compliant with Section 112, second paragraph, and respectfully request these rejections to be withdrawn. Amended claim 1 and amended claim 10 are the base claims for claims 2-9 and 11-19. The Examiner has not provided any specific rejections to these

dependent claims. Therefore, Applicants believe the Section 112, second paragraph rejections to be based on the independent claims 1 and 10. Therefore, Applicants respectfully request that these rejections be withdrawn.

The Examiner rejected claims 1-19 under 35 U.S.C. § 112, second paragraph as being incomplete "for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections." Specifically, the Examiner stated that the "omitted structural cooperative relationships are those relating to the interconnection of the vehicle engine, the first motor and the second motor." As noted above, claims 1 and 10 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claim 9 has been amended for the same reason. For example, amended claim 1 recites a "method for validating engine and motor velocities in a vehicle including an engine and a first motor arranged in a vehicle architecture such that at least one known mathematical relationship exists between the engine velocity and the velocity of the first motor, the engine and the first motor each being operable to output torque to at least one vehicle wheel...."

Applicants submit that this recitation supplies the necessary structural cooperative relationships between the elements, specifically providing a known relationship between the engine velocity and the velocity of the first motor based on the structure of the vehicle—i.e., the vehicle architecture. Moreover, since the engine and the first motor are each operable to output torque to a vehicle wheel, a relationship between the velocities of each of these elements and the velocity of the vehicle is established. Claim 9 is amended to specifically recite a second motor in such a way as to also provide essential structural cooperative relationships to the other elements. Independent claim 10 is amended in a similar fashion, also providing the essential structural cooperative relationships of each of the elements. Finally, claim 11 is amended to correct an inadvertent omission of the term "velocity", which was apparent from the remainder of the claim, as well as the specification. Applicants note that no new matter has been added by any of these amendments, each being fully supported by the specification as filed.

Claim Rejections--35 U.S.C. § 101

The Examiner rejected claims 1-19 under 35 U.S.C. § 101 stating that the "claimed invention is directed to non-statutory subject matter, because there is no end result or use of the 'validation' information." Applicants submit that the Examiner has a fundamental misunderstanding of the term "validation". According to WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE (Unabridged, 1986) the definition of "validation" includes "an act, process, or instance of validating," and specifically "the process of determining the degree of validity of a measuring device...." As recited in the claims, the velocities of certain torque producing elements, such as an engine and one or more motors, are validated. As discussed throughout the specification, sensor measurements and communications networks can be inaccurate, and therefore, validation may be used to ensure their accuracy—see, e.g., specification at paragraph 0006. As further discussed in the specification, one method of performing such validation is to use more than one sensor and compare the measurements of each of the sensors; this can be costly. Therefore, one advantage of the present invention is that it allows velocity validation to occur without the need to add additional sensors to the vehicle, where the only purpose of such sensors is to validate existing sensors. A knowledge of whether velocity measurements are accurate—i.e., validating the velocity measurements—is extremely useful, and is, of itself, an end result.

The Examiner states that "[s]ince Applicant does not make use of this information once the mathematical manipulation is finished, all that which is being claimed simply amounts to numerical processing without any concrete application or use which would then place the claims into one of the statutory classes of invention listed above." This statement again evinces a fundamental misunderstanding of the process of validation, and in particular, the process of validating velocities of torque producing devices, as is specifically claimed in the present application. The process of validation—i.e., determining the accuracy or degree of validity—of a device is extremely useful in many applications, and particularly so with regard to the velocities of torque producing devices in a vehicle. Therefore,

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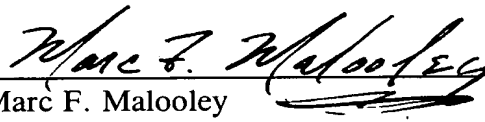
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Applicants respectfully request that the Section 101 rejections to each of the claims be withdrawn.

Based on the foregoing, Applicants request allowance of each of the pending claims.

Respectfully submitted,

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